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MEDICAL.

FUNCTIONS OF THE BRAIN.

From Combe on Health and Mental Education.

Most physiologists are agreed that the different parts of the brain perform distinct functions and that these functions are the highest and most important in the animal economy; but there is great discrepancy of opinion as in what the function of each part is, and as to the best mode of removing the obscurity in which the subject is involved. It would be useless to examine here the merits of the respective theories and modes of inquiry, as the attempt would lead us too far from the practical aim of the work. Suffice it to say, that all physiologists and philosophers regard the brain as the organ of mind; that most of them consider it as an aggregate of parts, each charged with a specific function; and that a large majority, with Gall and Cuvier at their head, regard the anterior lobe as more immediately the seat of the *intellectual* faculties. Further, by nearly universal consent the brain is held to be also the seat of the passions and moral feelings of our nature, as well as of consciousness and every other mental act, and to be the chief source of that nervous influence which is indispensable to the vitality and action of every organ of the body. There are so few exceptions to the general belief of these propositions, that I consider myself fairly entitled to hold them as established.

Many animals possess individual senses or instincts in greater perfection than man, but there is not one which can be compared with him in the number and range of its faculties; and, as a necessary consequence there is not one which approaches him in the developement and perfection of its nervous system. No organ can execute more than a simple function; and, accordingly, even the Edinburg Review admits, that, in precise proportion as we ascend in the scale of creation, and the animal acquires a sense, a power, or an instinct, do its nerves multiply and "its brain improve in structure and augument in volume, *each addition being marked by some addition or amplification of the powers of the animal, until in man we behold it possessing some parts of which animals are destitute, and wanting none which they possess,*" so that "*we are enabled to associate every faculty which gives superiority, with some addition to the nervous mass, even from the smallest indications of sensation and will, up to the highest degree of sensibility, judgment, and expression.*"†

It is extremely important to bear in mind this constant relation between mental power and developement of brain. It not only explains why capacities and dispositions are so different, but shows incontrovertibly that the cultivation of the moral and intellectual faculties can be successfully carried on only by acting in obedience to the laws of organization, and associating together those faculties, the organs of which are simultaneously progressive in their growth. It is a law, for instance, that alternate periods of activity and repose conduce to the strength and developement of every organ, and to the easy performance of its function, and that excess in either is alike hurtful in its consequences. If, therefore, in our anxiety for the advancement of a child in a favourite pursuit, we urge it to incessant and unvaried exertion of the same kind for many hours a day, we violate this law in neglecting the necessary intervals of rest, and thus run the risk of injuring the health of the brain, and entirely defeating our object. And, on the other hand, if we withdraw the child altogether from the pursuit, for weeks or months at a time, as happens during the vacation of the school, we violate the law again, in depriving the faculties of their necessary exercise, and thus run the risk of sacrificing the improvement already gained, and of diminishing the mental power. In neither case is the brain exercised in conformity with the organic laws, and consequently we look in vain for the same amount of improvement which would have followed their fulfilment; and yet, so far is the physiology of the brain from being considered as the only sound basis on which the science of education can rest, that very few teachers or moralists are aware that the organic laws have any connexion with the operations of mind, and still fewer have ever thought of adapting their practice to the dictates of these laws; although no truth in education or philosophy can be more clearly proved, or more beneficially applied, than that on which I am now insisting.

In thus treating of the brain as the indispensable instrument or organ of the mental faculties, I must not be understood as representing mind and brain to be one and the same thing. I mean only that the brain is necessarily engaged in every intellectual and moral operation, exactly as the eye is in every act of vision, and that, as the mind cannot see without the intervention of the eye, so neither can it think or feel, during life, except through the instrumentality of the brain. Consequently, it would be as reasonable and logical to infer, from the former proposition, that the eye is the mind or the mind the eye, as to infer from the latter that the brain is the mind, or the mind the brain.

It requires, however, to be distinctly understood, that activity of mind and activity of brain are inseparable, and that every change in the one is attended by a corresponding change in the condition of the other. If, by the excessive use of stimulants, the *brain* be highly excited, the mind will be disturbed in an equal degree, as is exemplified every day in the phenomena of intoxication: and if, on the other hand, the *mind* be suddenly roused by violent passions, the vessels of the brain will instantly take on increased action, redness will suffuse the face, and excitement of the brain will show itself in characters as legible as if produced by a physical cause.

The mind and brain being thus inseparably associated during life, it becomes an object of primary importance to discover the laws by which their healthy action is regulated, that we may yield them willing obedience, and escape the numerous evils consequent on their violation.

The brain being a part of the animal system, and subject to the same general laws as every other organ, the reader will not be surprised that I should, as in the case of the lungs, state a *sound original constitution* as the first condition of its healthy action. If the brain possess from birth a freedom from all hereditary taints and imperfections, and have acquired no unusual susceptibility from injudicious treatment in infancy, it will withstand a great deal in after-life before its health will give way. But if, on the other hand, either it inherit deficiencies, or early mismanagement have subsequently entailed upon it an unusual proneness to morbid action, it will give way under circumstances which would otherwise have been perfectly innocuous; and, accordingly, it may be truly said, that the most powerfull of all the causes which *predispose* to nervous and mental disease is the transmission of a *hereditary* tendency from parents to children, producing in the latter an unusual liability to the same maladies under which the parents have laboured.

Even where the defect in the parent is merely some peculiarity of disposition or temper, amounting perhaps to eccentricity, it is astonishing how clearly its influence on some one or other of the progeny may be traced, and how completely a constitutional bias of this description may interfere with a man's happiness or success in life. I have seen instances in which it pervaded every member of a family, and others in which it affected only one or two. When the original eccentricity is on the mother's side, and she is gifted with much force of character, the evil extends more widely among the children than when it is on the father's side. Where both parents are descended from tainted families, the progeny is of course more deeply affected than where one of them is from a pure stock; and, seemingly for this reason, hereditary predisposition is a more usual cause of nervous disease in the higher classes, who intermarry much with each other, than in the lower, who have a wider choice.

Unhappily, it is not merely as a cause of disease that hereditary predisposition is to be dreaded. The obstacles which it throws in the way of permanent recovery are even more formidable, and can never be entirely removed. Safety is to be found only in avoiding the perpetuation of the mischief; and, therefore, if two persons, each naturally of an excitable and delicate nervous temperament choose to unite for life, they have themselves to blame for the concentrated influence of similar tendencies in destroying the health of their offspring, and subjecting them to all the miseries of nervous disease, madness, or melancholy.

Even where no hereditary defect exists, continued excitement of the nervous functions in the mother, from anxiety, grief, or other causes, during pregnancy, has often a striking effect on the future mental health and constitution of the offspring. Many authors testify to the truth of this fact, which has not escaped the penetration of some mothers. The Margravine of Anspach observes justly, that "when a female is likely to become a mother, she ought to be doubly careful of her temper; and, in particular, to indulge no ideas that are not cheerful, and no sentiments that are not kind. Such is the connexion between the mind and body, that the features of the face are moulded commonly into an expression of the internal disposition; and is it not natural to think that an infant, before it is born, may be affected by the temper of its mother?"—*Memoirs*, vol. ii. chap. viii.

† Edingburg Review, No. xciv. p. 412-3.

From the Sunday School Journal.

DENOMINATIONAL AND GENERAL UNIONS.

Since the institution of the American Sunday-school Union, several other societies have been formed for the promotion and aid of Sabbath-schools. Some of these have been established for the benefit of a particular denomination throughout the whole country; others for particular denominations within certain limits. The Methodist Episcopal and Protestant Episcopal Unions, for instance, are in this sense *general*—they are designed to assist the cause in their respective denominations in all parts of the land, and are connected with their operations as churches. There are other denominational Unions, which are not connected officially with their ecclesiastical organizations, but are designed to promote the benefit and increase of the schools of their denominations within certain limits—such as the Massachusetts *Baptist* Union, or the Sabbath-school Society of the same State, which is *Congregational*. There is a third class of Unions, which are not restricted to any denomination, but are limited in extent, as the Illinois, the South Carolina, &c. The list we gave in our last number comprised only those Societies or Unions which are denominational. Our Society took the title of *Union* to express the assocaition of evangelical Christians, without regard to name. The other Societies have adopted it to signify the connexion of the members of their own body in a common enterprize. The *genus* and the *species* have the same term.

Whilst we are making this explanation for the benefit of some who have not understood the distinctions referred to, we would add a few remarks, to remove some other misapprehensions.

1. There is no interference or rivalry between the American and the other Unions. It was never the design of this society to monopolize this department of benevolence. Its effort has been to encourage the formation of Schools and Societies, whether connected with it or no. Whatever tends to promote religious education, furthers the main object of our institution—whether this be done for any one branch of the Christian church alone, or for all its branches collectively, there is so much accomplished for the great end in view.

2. The multiplication of denominational Unions, instead of diminishing, increases the necessity for a general Union. The main object of each of those is to advance and supply the schools of its own denomination. These schools require comparatively but a few books of a distinctive character—purely denominational—and the rest come within the scope of a General Society. Of course, the more schools, the greater must be the demand. Besides, in proportion as teachers and other assistance are required for such schools, the greater deficiency will be created in behalf of the multitudes who cannot be collected into them, on account of the diversity of the opinions of the parents, the want of accommodation, &c. It follows, then, that the American is not superseded by local or denominational Unions, however numerous they may be, and that there should be no collision between them. Each denomination or district may support its own Union; but it is no more reasonable to withhold aid on *that* account from the American Union than it is to refuse to support a Foreign or Domestic Missionary Society, because every man has his own pastor and church to maintain.

3. Therefore, the principles and operations of the General Union must continue unchanged, whatever changes may occur in the degree of favour in which it is regarded by the several denominations. We sometimes see assertions based on the supposition of one or another denomination *withdrawing* from our Union; and the inference made, that as each withdraws, it loses its privilege of being comprehended in our Union principles. This springs from inattention to the fact, which we are weary of repeating, that no denomination *can* withdraw from the Union, for the good reason that none is connected with it. It must go on in its work of encouraging Christian education and circulating moral and religious books, on the principles of Christian Union, so long as it has friends of any church to uphold it.

4. It is, then, the reciprocal duty of the general and special Sabbath-school Societies to regard each other as fellow-labourers in the same field, and to avail themselves of each other's assistance. There is probably no section of our country where a denominational Union can meet the wants of the whole population; and we suppose there is no evangelical church that would not find great help in adding our publications to those furnished by its special society. On the other hand, it is the duty of the missionaries of the General Union, and it is made obligatory by their commissions, not to interfere with any denominational schools, by attempting to change the principles on which they are established, or to disturb their connexion with another Union.

5. Every motive of Christian benevolence that leads any one to support local or special institutions of religious instruction, on the Lord's day, urges to the commensurate support of the only Union in this country in which Christians of all evangelical denominations may and do unite. There are hundreds of thousands who can be reached by the gospel in no other way. To meet this destitution the friends of the study of the Bible should vigorously combine, and send forth by the instrumentality of the Sabbath-school, the message of mercy through the Divine Redeemer.

RURAL ECONOMY.

Extract from a Pamphlet giving an Account of the Medical Properties of the Grey Sulphur Springs, Virginia.

The great reputation which the Mineral Springs of Virginia have of late years acquired, cause them to be resorted to, in great numbers, not only by invalids from every section of the United States and foreign parts, but also by individuals of leisure and fashion, whose principal object is, to pass the summer in an agreeable manner. The properties of the Warm, Hot, Sweet, White Sulphur, Salt Sulphur and Red Sulphur Springs are generally known. Those of the Grey Sulphur having been ascertained only within the last two years, have yet to be made public, and in order to do so, we are induced to give in this form, an account of the situation and medical properties, together with a statement of some of the cases benefitted by the use of the waters.

The Grey Sulphur Springs are situated near the line, dividing the counties of Giles and Monroe, Virginia; on the main road leading from the Court House of the one to the other. They are three fourths of a mile from Peterstown, 9 miles from the Red Sulphur, and by the County road, 20 1-4 miles from the Salt Sulphur Spring. In travelling to the Virginia Springs; by either, the main Tennessee, or Goodspur Gap roads and crossing the country from Newbern, by the stage road to the Sulphur Springs, the Grey Sulphur are the first arrived at. They are 30 miles distant from Newbern. The location is such as will admit of many and varied improvements, which when completed, will render this spot an elegant and desirable resort during the summer months, independent of the high medicinal properties of the Mineral Waters.

The present improvements consist of a brick Hotel 90 feet long, and 32 wide; two ranges of cabins 162 feet long each, which, with other buildings in connexion, afford accommodation for from 80 to 100 visiters.

There are two Springs at this establishment, situated within five feet of each other and inclosed in one building. Although rising so near to each other, yet they differ most materially in their action on the system. Both appears to be peculiarly serviceable in dyspeptic cases, and in such as originate in a disordered statate of the stomach—the one in those, in which inflamation exists, the other in such as proceed from torpidity. They have hitherto been known as the the Large and Small Springs; but having succeeded towards the close of the last season in procuring a much larger supply of water at the Small Spring, than is afforded by the Large, a change of names became necessary. The Large will hereafter be known as the Anti-dyspeptic, and the Small as the Aperient, which names will serve to point out their peculiar characteristics.

These Springs have been classed by Professor Shepard, as "*Alkalino Sulphurous,*" a variety so rarely met with, that another is not known in the United States. The waters are beautifully clear, and highly charged with gas, which render them light and extremely pleasant, especially that of the Anti-Dyspeptic spring, which produces none of those unpleasant sensations so frequently felt on the first drinking of Mineral Waters.

When first purchased, some of the water was submitted to a chemist for analysis; the quantity, however, was too small for him to ascertain all its ingredients. A more recent examination has been made by Professor C. U. Shepard, who has furnished us with the following abstract of an article which appears in the April number (1836) of Professor Silliman's Journal of Science and Arts.

"The following is the most satisfactory views which my experiments enable me to present of the condition of those Waters.

Specific gravity, 1003.

SOLUBLE INGREDIENTS.

Nitrogen,
Hydro Sulphuric acid,
Bi-Carbonate of Soda,*
A Super Carbonate of Lime,
Chloride of Calcium,
Chloride of Sodium,
Sulphate of Soda,
An Alkaline or earthy Crenate, or both,
Silicid acid.

INSOLUBLE INGREDIENTS.

Sulphuret of Iron,
Crenate of Per Oxide of Iron,
Silicic Acid,
Almunina,
Silicate of Iron.

My experiments do not permit me to point out the differences between the two Springs with precision. The new Spring appears to give rise to a greater amount of hydrosulphuric acid, as well as of iron and silicic acid. Probably it may differ in still other respects. I have not examined it for Iodine or Bromine."

As no regular analysis was attempted, the quantities in which these several ingredients, exist, still remain undetermined. That they are in different proportions in the two Springs, is evident not only from their deposites, but also from their action on the system. The action of the Anti-Dyspeptic Spring is diuretic and gently aperient, tending to restore the healthy performance of the functions, and reduce or diffuse the local irritations of disease. The Aperient Spring while it possesses all the alkaline properties ot the other, has an aperient and alterative action. Possessing more iron, (of which the other has but a trace,) it acts more powerfully as a tonic, while its other ingredients cause it to act in *some cases* as a very powerful aperient.

As these Springs have been visited by invalids, only during the two last seasons, it is reasonable to suppose that all their properties have not yet been discovered, nor all the cases ascertained in which they can be beneficially used. In fact, owing to the small quantity of water furnished hitherto by the Aperient Spring, its qualities have been but little tested, and there can be no doubt. (judging from its constituents) that it will be found equally salubrious as the Anti-Dyspeptic Spring, only better adapted to another class of cases. To give a general idea of the properties of these waters, we might say that they are peculiarly serviceable in those diseases which originate in a disorded state of the stomach and bowels, and also in hepatic affections. It is proper, however, to enter more into details, and we therefore, submit the following synopsis of the medical properties of the *Anti-Dyspeptic* Spring.

MEDICAL PROPERTIES.

1. It relieves nausea and headachs, arising from disorded stomachs.

2. Neutralises acidity, and if taken at meals, or immediately after, it has a tendency to prevent those unpleasant sensations so often experienced by invalids, from indiscretion in dieting.

3. Is an excellent tonic, exciting appetite and imparting strength to digestion.

4. Quiets irritation of the alimentary canal.

5. Controls and lessens the force of the circulation when unnaturally excited by disease, and often in this way, is remedial in internal inflammation of the organs.

6. It tranquilizes nervous irritability.

7. Is a mild and certain expectorant, often allaying dyspnœa, and promoting recovery from chronic ailments of the chest or wind pipe.

8. It alters the action of the liver where this has been previously deranged, in a manner peculiar to itself, and under circumstances in which the ordinary alternatives are forbidden by reason of their excitive, or otherwise irrelevant properties.

9. It is also suderific or diaphoretic; and

10. When taken at bed-time, often proves itself soporific: apparently stiling that indiscribable, but too well understood inquietude, which so frequently and unhappily interrupts or prevents the repose of the invalid, and especially of the dyspeptic.

Having thus briefly stated the properties of this Spring, we submit the following statement of cases, treated at the Grey Sulphur, illustrative of the effect of the waters, and in corroboration of what has been advanced. Except those which are noticed in their proper places, all are either directly from the pen of the sufferers themselves, or were immediately dictated by them in the form in which they appear in the notes. The originals are in our possession, signed by the individuals, whose cases are referred to.

The Pamphlet contains letters, from some of the most scientific gentlemen throughout the Union, recommending these Springs to the attention of invalids.

*It cannot be determined whether free carbonic acid exists in these waters without going into a quantitative analysis.—C. U. S.

From the Gennessee Farmer.

AGRICULTURAL PHRASEOLOGY.

No publication, whatever may be its subject or its merits, can be perused with advantage, unless the language used by the writer is understood, and the terms made use of clearly defined. Even definitions too frequently remind one of John Randolph in the House of Representatives: The hero of Roanoke, in one of his sarcastic and able yet rambling speches, found himself in the midst of a sentence so completely involved, that extrication was impossible, unless by cutting the gordian knot of words that inclosed him. "Mr. Speaker," said he, "the subject we are discussing, in the light I have presented it to you, is as clear as—as —the light of that window,—and that is not very clear," added he, pointing to the dusty windows of the capitol. Johnson, when he defined "higgledy piggledy" by "conglomeration," furnished a preguant instance of the common fault of definitions. The labors of Chaptal and Davy, by showing that many of what were formerly considered primitive earths, are merely combinations of a few of the principal ones, in different proportions, and by adopting an improved phraseology, have done much to simplify and render intelligible the language of agricultural chemistry, and its kindred subjects. Still there are many terms used necessarily more or less teachnical, or belonging almost exclusively to the business of agriculture, which we have reason to believe are not by all precisely understood, and as they must be considered as part of the language of every farmer in all countries and are of importance in elucidating the practice as well as theory of agriculture, we have supposed that a paper studiously plain on some of these terms, might not be altogether without its use. Another reason has also had its influence in bringing us to this conclusion—the Genessee Farmer receives generally an accession of new subscribers at the commencement of the yearly volume; and besides, the Monthly Farmer we hope will find its way into the hands of multitudes to whom the weekly Farmer has been inaccessible; and though the readers of the latter may be in some measure familiar with the topics here introduced, we trust they will not be entirely useless to any.

In accomplishing our object, it will not be necessary to refer to more than three of the primitive earths—*Silex* or flint, *Alumine* or clay, and *Lime*—since, though chemistry has detected the presence of seven or eight others, they exist in such minute quantities, and are so sparingly distributed, as not to produce the least sensible effect on the great mass. Of these three earths, silex alone composes one-half of the globe, and lime three-fourths of the remainder. Silex is the base of all the granitic and sandstone rocks, and all soils formed by the disintegration or crumbling of these, are composed of gravel or sand. Hence such soils are termed *silicious*, or sandy. Alumine is rarely found in a pure state, but in a mixed state,—is the basis of clay and several kinds of rocks. Soil in which alumine predominates is called *argillaceous* or clay soil. Lime is one of the most common earths, and from the important uses to which it is applied in civilized countries, is well known. It occurs most frequently combined with carbonic acid, in which state it forms limestone, marble, chalk, marine shells, and the shells of snails. The immense piles reared from the depths of the ocean by the coral insect, are also formed of lime. Combined with sulphuric acid, it forms that substance so all important to the farmer, gypsum or plaster of paris. The soil in which this earth prevails, is called *calcareous*, or limestone soil. Thus the principal soils from their composition are termed Silicious or sandy—Argillaceous or clayey—and Calcareous or limestone; and it is the combination of these original earths in different proportions with each other, and with vegetable mold, that forms the varieties of soil, different as they are in kind and fertility. Some writers formerly have spoken of loam as one of the original earths, but examination has showed it to be the primitive earths, alumine generally in the greatest proportion thoroughly mixed with decayed vegetable matter. To determine which kind of earth preponderates in a soil, generally requires but little attention or skill. The presence of lime or calcareous matter in soils is determined by drying some of it and pouring upon it some acid—sulphuric acid, or strong vinegar will do; and the violence of the effervescence or foaming will be in proportion to the lime in the soil. Clay and sand, and their respective proportions, are in general so easily distinguished by the farmer as to need no remark. Marl however is sometimes mistaken for clay, but the application of an acid instantly shows the difference. Perhaps the best soil that can be found is a true sandy loam, containing lime enough to ensure the decomposition of all vegetable matter, clay enough to prevent its baking, or hardening in the sun. Such a soil is adapted to the production of a greater variety of vegetables than any other and produces them in greater perfection, since it is generally of a first rate quality. It is evident therefore at first sight, that in order to cultivate a farm successfully, some knowledge of the constituent parts of its soil is necessary. Experience has proved that the use of lime has a great effect in fertilizing some soils; but to sow lime on a thoroughly calcareous soil would be like carrying coals to Newcastle, and to lavish gypsum or plaster upon wet heavy clay soils, would be a waste of both time and money; yet how often do we see farmers, from the want of a little knowledge or attention, pursuing a course of husbandry equally absurd. Where the quantity of sand is so great as to render the soil porous and friable, clay should be incorporated with it, and where the clay is in such quantity as to make it tenacious and liable to bake hard and crack in the sun, sand should be put upon it until the evil is removed. Upon soils purely calcareous, sand and clay united should be put, and upon all, vegetable mold or animal manure should be liberally used, if the highest degree of amelioration is our object. Marl is another important ingredient in the formation of soils. It is a substance consisting of lime mixed with a greater or less quantity of clay and sand, and frequently containing marine and animal remains. Where it can be applied in considerable quantities to a sandy soil—and nature seems to have wisely and kindly placed them in juxta-position, (witness the sandy plains of Long Island, Jersey, and the south,)—it converts such from being comparatively worthless, to the richest and most productive kind. It is by the judicious use of marl and manure, that Judge Buel of Albany has brought his sandy pitch-pine knolls to such an astonishing state of productiveness and fertility.

We shall here give the definition of a few other words and phrases, in addition to those above, as by long use, or appropriateness, they have become a necessary part of an agricultural vocabulary.

Vegetable Matter.—All vegetable substances, in decomposed or rotten state.

Animal Matter.—All animal substances in the same situation.

Organic Matter.—Both animal and vegetable substances in a decayed state.

Long Manure.—Is barn-yard manure before it is rotted, as fresh cornstalks or straw. Circumstances may justify the use of manure in this state, but experience has proved that it is not the most profitable way.

Short Manure.—This is a manure thoroughly decomposed or rotted in the yard. In this state it may be cut with a spade and shoveled as common earth.

Fossil Manure.—This is principally composed of lime, marl, shells and plaster, and on suitable soils is very valuable, a heavy dressing lasting for years.

Compost Manure.—This is made by mixing various substances such as leaves from the forest, mud from the brook, weeds from the field or garden, the wash of roads, and in general any vegetable, animal, or mineral matter, that can assist decomposition into a common mass, and when possible, turning them frequently until reduced to a fine rich earth. This manure is most valuable for the gardener is those operations where nothing not perfectly rotted can be allowed.

Soiling.—Is the feeding of cattle in a barn or yard during the summer with fresh grass or roots. As a grass for soiling the lucerne is highly recommended, though the common clover is generally used. Of roots, the mangel wurtzel is often preferred, since its large fleshy leaves are ready for picking early in the season, and provided the young and crown leaves are undisturbed, may be repeatedly stripped for food, until the root itself arrives at sufficient maturity for feeding.

Rotation of Crops, is a change from one kind of vegetable or plant to another in succession on the same ground. Its usefulness depends on the fact, that different plants do not take from the soil the same substances in the same proportions. Thus wheat does better after peas, barley or corn than after rye or wheat; and plants whose roots run near the surface ought to succeed the tap-rooted kind. Much of the excellence of the modern system of farming depends on a skillful rotation of crops.

White Crops, are such as become dry and white while ripening their seeds; the different kinds of grain are of this class.

Green Crops.—The carrot, cabage, pea, turnep, &c., those plants which continue green until ready to take off the ground, are called green crops. Such are much less exhausting than those that ripen their seed on the soil, and are therefore excellent in rotation with such.

Green Fallow.—When land intended to be sown with wheat in the fall has been kept mellow and clear of weeds during the